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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,526	03/29/2004	Kong Weng Lee	70030845-1	3297
57299	7590	10/12/2006		
AVAGO TECHNOLOGIES, LTD. P.O. BOX 1920 DENVER, CO 80201-1920				
EXAMINER MAKIYA, DAVID J				
ART UNIT			PAPER NUMBER	
2875				

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,526

Applicant(s)

LEE ET AL.

Examiner

David J. Makiya

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8-12 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12 and 15-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

The affidavit filed on 8/3/2006 under 37 CFR 1.131 is sufficient to overcome the Collins, III et al. reference. However, upon further consideration, a new ground(s) of rejection is made as detailed below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8-10, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gramann et al. (US Patent 5,907,151) in view of Haitz (US Patent 3,780,357).

With respect to claim 1, Gramann et al. teaches a light emitting diode package comprising a ceramic substrate (7; Column 2, Lines 48-55) for mounting a light emitting diode (1; Column 3, Lines 61-63), the substrate defining a cavity 8 with a ceramic sidewall, wherein the cavity is shaped to focus light in a predetermined direction (Column 3, Lines 62-67), and a metallic coating (12, 13) on a portion of the ceramic substrate for reflecting light in a predetermined direction (Column 6, Lines 10-12). However, Gramann et al. fails to teach the sidewalls of the cavity being vertical. Haitz teaches a light emitting diode package (Figure 4) with a ceramic substrate (16, 18; Column 4, Lines 58-60) for mounting a light emitting diode 12, the substrate defining a cavity with reflective, vertical sidewalls 21 shaped to focus light in a predetermined direction (Figures 3A and 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gramann et al. with the teachings of Haitz

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because a cavity with vertical sidewalls would be “uniform in appearance” and “more intense” (Haitz; Column 5, Lines 37-43).

With respect to claim 2, Gramann et al. teaches the light emitting diode package wherein the cavity is substantially a rectangular shaped cavity (Figure 2).

With respect to claim 3, Gramann et al. teaches the light emitting diode package wherein the cavity is substantially a trapezoidal shaped cavity (Figure 1).

With respect to claim 8, Gramann et al. teaches a method for manufacture of a light emitting diode package comprising forming a ceramic substrate (7; Column 2, Lines 48-55) for mounting a light emitting diode (1; Column 3, Lines 61-63), the substrate defining a cavity 8 with a ceramic sidewall, and the cavity having a bottom and a top (Figure 1), wherein the cavity is shaped to focus light in a predetermined direction (Column 3, Lines 62-67), coating a portion of the ceramic cavity with a light reflective material (12, 13; Column 6, Lines 10-12), positioning a light emitting diode 1 on the substrate, and depositing an optically transparent material 27 in the cavity to protect the light emitting diode. However, Gramann et al. fails to teach the sidewalls of the cavity being vertical. Haitz teaches a light emitting diode package (Figure 4) with a ceramic substrate (16, 18; Column 4, Lines 58-60) for mounting a light emitting diode 12, the substrate defining a cavity with reflective, vertical sidewalls 21 shaped to focus light in a predetermined direction (Figures 3A and 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Gramann et al. with the teachings of Haitz because a cavity with vertical sidewalls would be “uniform in appearance” and “more intense” (Haitz; Column 5, Lines 37-43).

With respect to claim 9, Gramann et al. teaches the light emitting diode package wherein the cavity is substantially a rectangular shaped cavity (Figure 2).

With respect to claim 10, Gramann et al. teaches the light emitting diode package wherein the cavity is substantially a trapezoidal shaped cavity (Figure 1).

With respect to claims 15-17, Gramann et al. teaches the method wherein positioning the light emitting diode comprises determining a location between the bottom and the top of the cavity to locate the light emitting diode (Figure 1). It is an inherent characteristic of a light-emitting device to have a viewing angle. Based on the structure of the reference light emitting diode package, positioning the light emitting diode within the cavity will result in light emitting only within an angle created by the cavity. It is therefore inherent in the structure of the device that positioning the light emitting diode within the cavity will achieve a predetermined viewing angle of the light emitting diode while moving the light emitting diode closer to the bottom of the cavity will reduce the viewing angle and moving it closer to the top of the cavity will increase the viewing angle.

With respect to claim 18, Gramann et al. teaches the method wherein depositing the optically transparent material in the cavity to protect to light emitting diode comprises forming a domed layer of the optically transparent material over the light emitting diode (Figure 1).

Claims 4-5 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gramann et al. in view of Haitz as applied to claims 1 and 8 above and further in view of Ishinaga (US Patent 6,355,946).

With respect to claims 4-5, Gramann et al. in view of Haitz teaches the light emitting diode package as described in claim 1, but fails to explicitly state the shape of the cavity.

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Ishinaga teaches the use of rectangular (Figure 8), trapezoidal (Figure 7), oval (Figure 2), and circular (Figure 12) shaped cavities. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Gramann et al. package with the teachings of Ishinaga because different shapes would provide different illumination patterns and would increase the aesthetic appearance based on the application of the device.

With respect to claims 11-12, Gramann et al. in view of Haitz teaches the method for manufacture of a light emitting diode package as described in claim 8, but fails to explicitly state the shape of the cavity. Ishinaga teaches the use of rectangular (Figure 8), trapezoidal (Figure 7), oval (Figure 2), and circular (Figure 12) shaped cavities. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Gramann et al. method with the teachings of Ishinaga because different shapes would provide different illumination patterns and would increase the aesthetic appearance based on the application of the device.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gramann et al. in view of Haitz as described in claim 8 and further in view of Abe (US Patent 5,177,593).

With respect to claim 19, Gramann et al. teaches the method as described above, but fails to teach the optically transparent material forming a concaved layer. Abe teaches the method of depositing an optically transparent material 35 to protect a light emitting diode 33 comprises forming a concaved layer of the optically transparent material over the light emitting diode (Figure 4B). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the Gramann et al. method with the teachings of Abe because having a concaved layer over the LED provides the ability to focus the emitted light in a more

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concentrated area and the resin would provide “excellent adhesive property to a chip and also having excellent moisture and thermal resistance” (Abe; Column 33-37).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Carey et al. (US Patent 6,204,523) teaches a light emitting diode with a chip at various heights. Kida et al. (US Patent 7,038,195), Wong (US Patent 5,317,196), Yeager et al. (US Patent 6,507,049) and Roberts et al. (US 2002/0004251) teach light emitting diodes with ceramic substrates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on (571) 272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJM 10/05/2006

A handwritten signature in black ink, appearing to read 'John Anthony Ward', is positioned above the printed name.

**JOHN ANTHONY WARD
PRIMARY EXAMINER**